2G RF Planning & Optimization (2 days)

2G/2.5G

Designing a GSM cellular system with both Macrocellular and Microcellular networks is a delicate balancing exercise. The goal is to achieve optimum use of resources and maximum revenue potential whilst maintaining a high level of system quality. This course provides a good understanding of GSM concepts, RF planning process & Optimization details. A good knowledge of telecommunication & GSM technology would be beneficial for anyone attending this course.

Who Should Attend

This is advanced level course and suitable for telecom professionals including design, testing , support & sales engineers requiring good RF planning & optimization knowledge.

Objective

After completing this course, the audience will be able to:

- Understand GSM architecture & concept
- Describe RF wave & antenna properties
- Define RF planning process
- Explain optimization

Course Contents

GSM Overview

GSM Network Architecture

- Radio Subsystem
- Network Subsystem (NSS)
- Operation Subsystem (OSS)
- BTS/BSC/MSC

GSM Radio/Physical Layer

GSM Protocols & Interfaces

GSM Network Mobility and Call Processing

RF Wave Propagation

- Coverge Area
- Propagation Environnent
- Propagation Models
- Free space propagation
- Wave Propagation Effects
- Multipath, Fading
- Diversity

Antenna Operations Fundamentals

- Radio Link
- Antenna
- Antenna Types
- Radiation Pattern
- Antenna Gain
- Antenna Characteristics

GSM Cell Concepts

- Geographical Characteristics
- Location Information - GSM Service Area Hierarchy
- Cell Characteristics
- Cellular Concept
- Frequency Reuse
- Interference
- Co-channel Interference
- Decreasing the co-channel interference Sectorisation
- Adjacent-Channel Interference

2G RF Planning

- Radio Network planning process
- Establish Network Requirements
- Pre-planning Process
- Site Survey & Site Selection
- Frequency Plan & CI Analysis
- Parameter Planning
- Link budget calculation
- Important Components of Link Budget Calculations
- Output and Effect of Link Budget Calculations
- Frequency Hopping
- Coverage Planning
- Capacity Planning
- Traffic Estimates
- Average Antenna Height
- Frequency Usage and Re-use
- Spectrum Efficiency and Frequency Planning

2G RF Optimization

- Optimization - How?
- Optimizing - New Cell Site Location & Antenna Tilts
- Optimizing - Neighbor lists
- Optimizing - Handover Margin
- Optimization for Interference

Drive Testing